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Exosomes: The next generation Facial?

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Exosomes are small vesicles that are naturally produced by many types of cells in the body. They contain a variety of signalling molecules, such as proteins, nucleic acids, and lipids, that can influence the behaviour of other cells. They are small enough to penetrate cell membranes, making them a promising tool for delivering therapeutic agents to specific cells in the body. They also have low immunogenicity, which means they are less likely to cause an immune response than other cell-based therapies.

Discovered in the 1980s as small, membrane-bound vesicles that are secreted by cells and was not until the 2000s, researchers began investigating the potential of mesenchymal stem cells (MSCs) for skin rejuvenation. MSCs are a type of adult stem cell that have the ability to differentiate into a variety of cell types, and have been shown to promote tissue repair and regeneration. However, it was later discovered that the therapeutic effects of MSCs were largely due to the release of exosomes, rather than the MSCs themselves. Since then, researchers have been investigating the potential of exosomes for skin rejuvenation. Exosomes derived from various sources, including MSCs, adipose-derived stem cells, and platelets, have been studied for their potential to stimulate collagen production, reduce inflammation, and promote wound healing. Since then, a growing number of studies have explored the potential of exosomes for various skin conditions, including ageing, wrinkles, and sun damage with promising results.

Exosomes vs Growth Factors

Both are naturally occurring and have been studied extensively for their potential to promote tissue repair and regeneration, including in the context of skin rejuvenation. Growth factors can be derived from platelets and stem cells, and are used in cosmetic procedures such as platelet-rich plasma (PRP) therapy and growth factor treatments.

Exosomes, on the other hand, are small, membrane-bound vesicles that are secreted by cells, and contain a variety of bioactive molecules including proteins, lipids, and nucleic acids. One advantage of exosomes over growth factors is their ability to deliver multiple bioactive molecules simultaneously. Because exosomes contain a variety of molecules, they may have a broader range of effects on skin rejuvenation compared to growth factors. Additionally, exosomes are thought to be more stable than growth factors, as they are protected by a membrane that helps to prevent degradation.

Recent Publications:

1. Yang, G.H., Lee, Y.B., Kang, D. et al. Overcome the barriers of the skin: exosome therapy. Biomater Res 25, 22 (2021). https://doi.org/ 10.1186/s40824-021-00224-8

2. Pelekanos RA, Sardesai VS, Futrega K, Lott WB, Kuhn M, Doran MR. Isolation and expansion of mesenchymal stem/ stromal cells derived from human placenta tissue. J Vis Exp. 2016;112:e54204.

3. Kee LT, Ng CY, Al-Masawa ME et al. Extracellular Vesicles in Facial Aesthetics: A Review. Int. J. Mol. Sci. 23(12), 6742 (2022 Jun 16)

4. Marks PW, Witten CM, Califf RM. Clarifying stem-cell therapy's benefits and risks. N. Engl. J. Med. 376(11), 1007–1009 (2017)



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Biography

Anoob is a Medical Aesthetic Consultant running successful clinics in Leeds and London. He is based at the Harley Street Specialist Hospital in London. With a proven track record of over 25 years as an Anaesthetist for the NHS, he leverages his medical expertise to offer a wide range of safe, state-of-the-art and medical grade aesthetic treatments. He has undergone Aesthetic training in the UK and Internationally, obtaining the Diploma in Aesthetics from AAAM as well as the Board Certification (their highest qualification). In addition to his clinical work, Dr. Pakkar-Hull is actively involved in teaching and training the next generation of aesthetic practitioners. He serves as a lecturer and mentor for medical students and trainees, and is frequently invited to speak at conferences and educational events. He has international publications on Acne Management, Meso-Tox and Acute pain management.

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